

***Remarks***

Reconsideration of this Application is respectfully requested.

Upon entry of the foregoing amendment, claims 1-35 are pending in the application, with claims 1, 22, 30, 31, and 34 being the independent claims. Claim 20 is sought to be amended to correct informalities. These changes are believed to introduce no new matter, and their entry is respectfully requested.

Based on the above amendment and the following remarks, Applicants respectfully request that the Examiner reconsider all outstanding objections and rejections and that they be withdrawn.

***Allowable Subject Matter***

In the Office Action, the Examiner objects to claims 7-9, 11, and 12 as being dependent upon a rejected base claim, but the Examiner indicates that these claims would be allowable if rewritten in independent form to include the limitations of the independent and intervening claims. (Paper No. 20050609, page 16). Applicants acknowledge with appreciation the Examiner's conditional allowance of these claims.

Regarding the allowable subject matter, Applicants would like to clarify the record with respect to claims 31-35. In the Office Action, the Examiner notes that claims 31-35 have been added per Applicants' request. (Paper No. 20050609, page 16). Referring to Applicants' previous Amendment and Reply (submitted on 9 May 2005),

claims 31-35 were added to rewrite claims 7-9, 11, and 12, respectively, in independent form, and include all of the limitations of the base claim and intervening claims, as presented at the time of the Examiner's conditional allowance. Claims 31-35 include the subject matter that the Examiner indicates as being allowable in both the current Office Action (Paper No. 20050609) and the previous Office Action (Paper No. 20050129). Therefore, claims 31-35 should presently be in condition for allowance.

With respect to the pending claims 7-9 and 11-12, their base and intervening claims were amended in the Applicants' previous Amendment and Reply (submitted on 9 May 2005). Therefore, the pending claims 7-9 and 11-12 include additional features that are not present in claims 31-35. Nonetheless based on the Examiner's statements (Paper No. 20050609, pages 15-16), claims 7-9, 11-12, and 31-35 should all be allowable.

Regarding the objections to claims 7-9 and 11-12, Applicants believe these objections are no longer valid in light of the above amendment.

***Rejections under 35 U.S.C. § 102***

In the Office Action, the Examiner rejects claims 1-6, 10, 13, and 22-35 under 35 U.S.C. § 102(e), as allegedly being anticipated by U.S. Patent Application Publication 2002/0089937 to Venkatachary *et al.* (herein referred to as "Venkatachary"). (Paper No. 20050129, page 5-16). Applicants respectfully traverse.

With respect to independent claim 1, Venkatachary does not disclose for example:

analyzing each of said plurality of bit positions to select a first bit position to partition said collection into at least two sets of siblings, wherein said analyzing includes applying at least one of empirical knowledge or a computed metric for each bit position to select said first bit position.

The Examiner asserts that Venkatachary discloses the above step in Figures 2A-2D and Paragraphs 0004, 0007, 0024, 0027, and 0039. However, these passages do not describe the above step. On the contrary, Venkatachary discloses that a recursive algorithm is used to construct the hierarchical subdivision trees depicted in Figures 2A-2D. Referring to Paragraphs 0033-0039, Venkatachary discloses that each bit of a rule is traversed sequentially from left to right (see especially Paragraph 0039). Starting with the first bit (i.e., “CurrentBit=0”), Venkatachary’s rule database 200 is divided into three nodes 202, 204, and 206. Thereafter, Venkatachary sequentially traverses to the next bit (i.e., “CurrentBit=1”), and repeats the process. Unlike Applicants’ claim 1, Venkatachary does not disclose that each bit (i.e., “CurrentBit=[0,4]”) is analyzed to select the first bit position for partitioning. Venkatachary does not disclose the application of any empirical knowledge to decide which bit position to select as the first bit position. Venkatachary does not disclose the application of any computed metric to decide which bit position to select as the first bit position. Therefore, Venkatachary does not disclose the “analyzing step” recited in claim 1.

Claims 2-6, 10, and 13 depend from independent claim 1, and therefore, are patentable for at least the reasons provided above, in addition to the features recited therein. For example, Venkatachary does not disclose “wherein said partition threshold

is predicated on a maximum number of rules residing in a subset of siblings at a respective lower level,” as recited in claim 4. The Examiner cites Paragraph 0044 in Venkatachary to disclose claim 4, but this passage teaches the opposite (i.e., “[t]he exact number of rules, their bit lengths, the number of nodes, leaves, branches and the like, along with the number of iterations of the recursive HST algorithm required to complete the HST of FIG. 3a *is unimportant* to this example.” emphasis added).

Regarding claim 6, Venkatachary does not disclose “wherein each sibling at a respective level has a substantially equivalent quantity of said packet classification rules.” The Examiner cites Paragraph 0063-0064 in Venkatachary to disclose claim 6, but this passage makes no reference to the quantity of rules at each level. This passage describes the storage requirements and average power dissipation for sub-databases. This passage describes the “units of bytes per rule” and that this value “may be different for each sub-database.” Storage requirements, units of bytes per rule, and power dissipation are not equivalent to “quantity of said packet classification rules.”

Regarding claim 13, Venkatachary does not disclose “receiving at least one packet classification rule within said collection that has two or more bit positions that denote a feature having a range of values.” The Examiner cites Paragraphs 0006, 0007, and 0024 in Venkatachary to disclose claim 13, but these passages make no reference to ranges.

With respect to independent claim 22, Venkatachary does not disclose for example:

wherein said mask constructor applies at least one of empirical knowledge or a computed metric for each bit position to select the bit position corresponding to each index key.

The Examiner asserts the above is disclosed in Venkatachary in Figures 2A-2D and Paragraphs 0004, 0007, 0024, 0027, and 0039. As discussed above with respect to independent claim 1, Venkatachary does not disclose the application of any empirical knowledge to decide which bit position to select as the bit position corresponding to each index key. Venkatachary does not disclose the application of any computed metric to decide which bit position to select as the bit position corresponding to each index key.

Claims 23-29 depend directly or indirectly from independent claim 22, and therefore, are patentable for at least the reasons provided above, in addition to the features recited therein. For example, Venkatachary does not disclose “a key extractor for applying said query key to produce a refined rule collection from said collection located within said first memory,” as recited in claim 24.

With respect to independent claim 30, Venkatachary does not disclose for example:

wherein said first computer readable program code means applies at least one of empirical knowledge or a computed metric for each location to select the bit position corresponding to each index key.

The Examiner asserts the above is disclosed in Venkatachary in Figures 2A-2D and Paragraphs 0004, 0007, 0024, 0027, and 0039. Even if Venkatachary disclosed a computer program product (which it does not and Applicants do not concede), Venkatachary does not disclose computer readable program code means that applies any empirical knowledge to decide which bit position to select as the bit position corresponding to each index key, as discussed above with respect to independent claim 1. Venkatachary does not disclose computer readable program code means that applies any

computed metric to decide which bit position to select as the bit position corresponding to each index key.

As discussed above with respect to the allowable subject matter, claims 31-35 recite subject matter that the Examiner has indicated as being allowable in both the current Office Action (Paper No. 20050609) and the previous Office Action (Paper No. 20050129). It should be noted that Figures 2B and 2C in Venkatachary do not disclose “measuring a difference in cardinality at each location coordinate that has not been selected previously as an index key.” As discussed above with respect to the rejection of claim 1, Venkatachary discloses that each bit position is sequentially traversed to divide the rule database into sub-databases. Venkatachary does not disclose that a difference in cardinality is measured at each location, as recited in claims 31 and 34.

Applicants respectfully request reconsideration and withdrawal of the rejection of the above claims, and allowance thereof.

***Rejections under 35 U.S.C. § 103***

In the Office Action, the Examiner rejects claims 14-21 under 35 U.S.C. § 103 as allegedly being unpatentable over Venkatachary in view of U.S. Patent 6,600,744 to Carr *et al.* (herein referred to as “Carr”).

Claims 14-21 depend directly or indirectly from independent claim 1, and therefore, are patentable for at least the reasons provided above with respect to the rejection of claim 1, in addition to the features recited therein. It should be noted that the Examiner has presented contradictory statements with respect to the rejections of claims

14 and claims 23. Regarding claim 23, the Examiner alleges that Venkatachary discloses “wherein said mask constructor assembles said one or more index keys into a query key” (which it does not). However regarding claim 14, the Examiner concedes that Venkatachary does not disclose “manifesting a query key based on the selected index keys.” (Paper No. 20050609, page 11).

Carr does not cure the deficiencies of Venkatachary, since Carr does not teach or suggest (alone or in combination), for example, “analyzing each of said plurality of bit positions to select a first bit position to partition said collection into at least two sets of siblings, wherein said analyzing includes applying at least one of empirical knowledge or a computed metric for each bit position to select said first bit position,” as recited in independent claim 1.

As such, Applicants respectfully request reconsideration and withdrawal of the rejection of the above claims, and allowance thereof.

### ***Conclusion***

All of the stated grounds of objection and rejection have been properly traversed, accommodated, or rendered moot. Applicants therefore respectfully request that the Examiner reconsider all presently outstanding objections and rejections and that they be withdrawn. Applicants believe that a full and complete reply has been made to the outstanding Office Action and, as such, the present application is in condition for allowance. If the Examiner believes, for any reason, that personal communication will

expedite prosecution of this application, the Examiner is invited to telephone the undersigned at the number provided.

Prompt and favorable consideration of this Amendment and Reply is respectfully requested.

Respectfully submitted,

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